IN THE CLAIMS

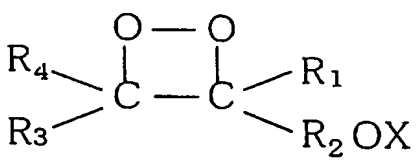
Please amend the claims as follows:

1. – 15. (Cancelled)

16. (New) A method of producing chemiluminescence in a solid phase immunoassay, comprising contacting at least one antigen or/and an antibody immobilized onto fine solid carriers dispersed in a liquid medium with a chemiluminescent substrate comprising at least one dioxetane, an enzyme for performing chemiluminescence, and at least one of a water soluble macromolecular quaternary ammonium salt, a sulfonium salt or a phosphonium salt chemiluminescence enhancer which has been treated with an oxidizing agent or a reducing agent and which is capable of enhancing the emission of light caused by the reaction of the chemiluminescent substrate with the enzyme.

17. (New) The method according to claim 16, wherein the chemiluminescence enhancer does not substantially comprise a component with a molecular weight of more than 400,000 daltons in molecular weight as separated by an ultrafiltration method.

18. (New) The method according to claim 16, wherein the chemiluminescent substrate comprising at least one dioxetane represented by general formula:



wherein R_2 is an aryl group substituted with an X-oxy group, which forms 1,2-dioxetane compound which is an unstable oxide intermediate when X is eliminated by activator enzyme to induce a reaction, which unstable 1,2-dioxetane compound is decomposed with releasing electron energy to produce light and two carbonyl-containing compounds of general formulae,

and X is a chemically easily reactive group which is eliminated by an enzyme; R_1 is one selected from the group consisting of an alkyl group, an alkoxy group, an aryloxy group, a dialkylamino group, a trialkylsilyloxy group, an arylsilyloxy group, an aryl group and an aryl group which is bound to an aryl group R_2 to form a polycyclic aryl group with X-oxy group substitution, which spiro-binds to a 1,2-dioxetane ring; R_3 and R_4 are each an alkyl group or a heteroalkyl group, or R_3 and R_4 may be together bound to form a polycyclic alkylene group which spiro-binds to the 1,2-dioxetane ring.

19. (New) The method according to claim 16, wherein the chemiluminescent enhancer is prepared from a monomer selected from the group consisting of a quaternary ammonium salt, a sulfonium salt, a quaternary phosphonium salt, and mixtures thereof.

20. (New) The method according to claim 16, wherein the chemiluminescent enhancer is a polymerized quaternary ammonium salt, a polymerized sulfonium salt, a polymerized quaternary phosphonium salt, or copolymers thereof.

21. (New) The method according to claim 16, wherein the chemiluminescent enhancer is selected from the group consisting of poly[vinylbenzyl(benzylmethyl ammonium chloride)], poly(vinylbenzyltrimethyl ammonium chloride), poly[vinylbenzyl(tributyl ammonium chloride)], benzylmethylcetyl ammonium chloride, polymethacrylamidepropylenemethyl ammonium chloride, poly[vinylbenzyl(triethyl ammonium chloride)], poly[vinylbenzyl(2-benzylamino)ethyldimethyl ammonium chloride], poly[vinylbenzyldimethyl(2-hydroxy)ethyl ammonium chloride], poly[vinylbenzyl(trimethylphosphonium chloride)], poly[vinylbenzyl(tributylphosphonium chloride and poly[vinylbenzyl(trioctylphosphonium chloride)] and copolymers thereof.

22. (New) The method according to claim 16, wherein the solid carrier is a particle.

23. (New) The method according to claim 22, wherein the particle is a magnetic particle.

24. (New) The method according to claim 16, wherein the chemiluminescence enhancer has been treated with at least one oxidizing agent or a reducing agent selected from the group consisting of ammonium persulfate, sodium sulfite, sodium hypochlorite, hydrogen peroxide, sodium metaperiodate, potassium permanganate and potassium dichromate.

25. (New) The method according to claim 16, wherein the enzyme is at least one of acid phosphatase, alkali phosphatase, glucosidase, glucuronidase or esterase.